September 30, 2016

Arthur Burbank
USDA Forest Service
4350 South Cliffs Dr.
Pocatello, ID 83204

Subject: Biological Selenium Removal Treatment Technology
Fluidized Bed Bioreactor Pilot Study
August 2016 Progress Report

Dear Art,

This progress report summarizes key activities in August 2016 associated with the fluidized bed bioreactor (FBR) pilot study located near Hoopes Spring. This pilot study is being conducted as part of the Smoky Canyon Mine Remedial Investigation/Feasibility Study (RI/FS) to provide information on the effectiveness of the active biological treatment system in removing selenium and other COPCs from South Fork Sage Creek Springs and Hoopes Spring. Operation and monitoring of the pilot study follows the *Pilot Study Work Plan and Sampling and Analysis Plan (Work Plan/SAP), Biological Selenium Removal Treatment Technology Fluidized Bed Bioreactor* (prepared by Formation Environmental, dated September 2014, with revised text and tables dated March 5, 2015), along with Work Plan/SAP Addenda 01 through 04.

Weekly sample collection during the 12-week performance testing period was completed on June 28, after which sampling has been conducted every other week. The system is currently operational, and samples collected during the month of August were analyzed for the focused analyte list only, as specified in the Work Plan/SAP.

The following sampling events were conducted in August 2016:

- Week 17 sampling on August 4; and
- Week 19 sampling on August 18

Identification of Deliverables and Data Transmittals

At the time of this report, the 12-week performance testing has been completed, and laboratory data for Weeks 17 and 19 of the every other week testing period have been received. Preliminary laboratory data are presented in Table 1. Field data for Weeks 15 (not previously provided), 17, and 19 of the every other week monitoring period are presented in Table 2.

There were no outstanding deliverables or transmittals for the month of August.

Upcoming Activities

The following activities associated with the FBR pilot study are planned through September 2016:

- As per the Work Plan/SAP, sample collection will continue every other week (focused analyte list only). This phase of sampling began on July 6.
- Quarterly sampling under the full analyte list occurred on September 2.
- Preparation of the Work Plan/SAP for Phase 2 of the FBR treatability study, which includes addition of reverse osmosis and an increase in treatment system flow capacity.

Please contact me if there are questions regarding this monthly progress report.

Sincerely,

Monty Johnson
Environmental Engineering Manager
J. R. Simplot Company

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Table 1
Laboratory Results Focused Analyte List

		Week 17		Week 19	
	Station >>	Influent	Effluent	Influent	Effluent
	Sample ID >>	SC0816-LSSHS-IN001	SC0816-LSSHS-EF001	SC0816-LSSHS-IN002	SC0816-LSSHS-EF002
	Date >>	8/4/2016	8/4/2016	8/18/2016	8/18/2016
Analyte	**Units**	mg/L	mg/L	mg/L	mg/L
General Chemistry					
Nitrate as N	mg/L	0.44	0.16	0.44	0.16
Total Phosphorus as P	mg/L	0.0215	0.214	0.0371	0.165
Total Sulfide	mg/L	1 U	1 U	1 U	1 U
Metals and Metalloids					
Selenium, Dissolved	mg/L	0.129	0.00808	0.14	0.01
Selenium, Total	mg/L	0.12	0.00721	0.139	0.00956

Notes:
Results presented are preliminary, and have not been validated at the time of this report.
U - Analyte not detected above the method detection limit (MDL).
J - Result is estimated.

Week 15	Station >>	Influent	Effluent
	Sample ID >>	SC0716-LSSHS-IN002	SC0716-LSSHS-EF002
	Date >>	7/20/2016	7/20/2016
Analyte	**Units**	mg/L	mg/L
Dissolved Oxygen	mg/L	8.43	7.16
ORP	mV	206	181
pH	SU	7.29	6.83
SC	umhos/cm	431	482
Temperature	C	13.2	12.84
Turbidity	NTU	1.6	8.4

Week 17	Station >>	Influent	Effluent
	Sample ID >>	SC0816-LSSHS-IN001	SC0816-LSSHS-EF001
	Date >>	8/4/2016	8/4/2016
Analyte	**Units**	mg/L	mg/L
Dissolved Oxygen	mg/L	8.98	7.79
ORP	mV	211	186
pH	SU	6.94	6.43
SC	umhos/cm	466	482
Temperature	C	12.83	12.53
Turbidity	NTU	2	4.3

Week 19	Station >>	Influent	Effluent
	Sample ID >>	SC0816-LSSHS-IN002	SC0816-LSSHS-EF002
	Date >>	8/18/2016	8/18/2016
Analyte	**Units**	mg/L	mg/L
Dissolved Oxygen	mg/L	8.56	7.31
ORP	mV	249	184
pH	SU	6.84	6.48
SC	umhos/cm	466	478
Temperature	C	13.29	12.68
Turbidity	NTU	2	7.8